

EXHIBIT 5



Federal Aviation Administration

Memorandum

Date: August 18, 2009

To: Oscar Alvarez, Director of ATC Spectrum Engineering Services, AJW-6

From: Mark R. Schilling, Acting Manager, *Mark R. Schilling*
Rotorcraft Directorate, Aircraft Certification Service, ASW-100

Prepared by: Matthew Rigsby, Acting Manager, Safety Management Group,
Rotorcraft Standards Staff, ASW-112 (817) 222- 5110

Subject: Obstacle Collision Avoidance System (OCAS) Approval for Very High
Frequency (VHF) Broadcast Frequency Approval.

This memorandum is a follow-up to our previous memorandum dated August 7, 2007, regarding the Rotorcraft Directorate's FULL support for the acceptance of OCAS and OCAS type systems as a means to improve the overall safety of the aviation community.

The recent FAA memo dated June 15, 2009, from Kevin Haggerty announced the approval of Audio Visual Warning Systems (AVWS) as an acceptable form of obstruction marking and lighting. The June 15, 2009, memo also announced that OCAS is the first AVWS to be installed, tested, and approved in the National Airspace System. We are pleased to see this action taken.

Saving lives through collision avoidance is a number one priority and the reason that we committed to an effective and comprehensive evaluation and ultimate acceptance of OCAS. This evaluation was completed in August 2005. The testing and evaluation was conducted with the participation of the Norwegian Civil Aviation Authority (CAA) and Transport Canada officials. Each of these countries have already accepted the OCAS as an equivalent and superior obstruction marking and lighting alternative. Several other countries are also in the process of obtaining acceptance. If the FAA is to remain one of the world leaders in aviation safety, full acceptance of AVWS type systems is imperative.

The Rotorcraft Directorate strongly believes that the audio component of an AVWS system is the most critical aspect in detecting and avoiding high risk obstacles. It has long been proven that cockpit audio warnings are key to alert a pilot of an emergency situation and that a combination of visual and audio alerts are most effective.

With this in mind, the audio capabilities of AVWS should be embraced and encouraged to the fullest extent possible. We understand that in some cases, the frequencies and radio range should be limited so as not to interfere with other critical air operations. However, every attempt should be made by the FAA to allow for the full use of these capabilities.

Our recommendation is that the FAA develop a clear policy and process for recommending and approving VHF frequencies on a location specific basis as AVWS applications are submitted through the normal channels. Every attempt should be made to approve as many frequencies as possible in order to allow for the maximum safety levels. The FAA has made almost no progress on this issue in the 4 years since testing was completed. We hope that action will be taken in an expeditious manner, as we view AVWS systems as a great benefit to the aviation community. Please do not hesitate to let us know if we can be of any assistance.

EXHIBIT 6



Federal Aviation Administration

Memorandum

Date: OCT 16 2009

To: Mark R. Schilling, Acting Manager, Rotorcraft Directorate,
Aircraft Certification Service, ASW-100

From: Oscar Alvarez, Director, Spectrum Engineering Services, AJW-6

Prepared by: RJ Balanga, (202) 267-3819

Subject: POLICY: Air Traffic Control Frequency Use for Audio Visual Warning
Systems in the 118 - 137 MHz Frequency Band

In response to your memorandum, dated August 18, 2009, regarding the utilization of very high frequency (VHF) frequencies in support of the audio broadcast warning capabilities of audio visual warning systems (AVWS) systems, Spectrum Engineering Service's policy is that, for other safety reasons, VHF Air Traffic Control (ATC) frequencies within 118 - 137 MHz will not be used to support AVWS systems, including the Obstacle Collision Avoidance System (OCAS).

Upon reviewing technical documents provided by OCAS, coupled with several analyses performed by my office, we have determined that the use of VHF ATC frequencies is inconsistent with already existing safety of life functions. Although we agree with your statement that "saving lives through collision avoidance is a number one priority...", we are unable to justify the use of VHF ATC frequencies to support AVWS systems without compromising the existing ATC safety system. The use of such frequencies poses an unacceptable risk to flight safety due to the potential for radio frequency interference to controller-pilot communications on non-participating aircraft in the vicinity of AVWS operations.

Notwithstanding this, we do not object to the utilization of other aviation frequencies, managed by the Federal Communications Commission (FCC), in the VHF (118 - 137 MHz) frequency band, for AVWS systems. These are frequencies annotated under 47 CFR, part 87, which are used for UNICOM, MULTICOM, fixed wing aircraft air-to-air, and helicopter air-to-air. As the FAA is not the manager for those frequencies, coordination for frequency use must be performed directly with the FCC.

If you have any further questions or require additional information, please do not hesitate to contact me, directly, at (202) 267-9531.

ORIGINAL SIGNED BY:

Oscar Alvarez

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EXHIBIT 7

A New Solution to an Old Problem?

Aircraft have been flying into things for as long as there have been aircraft. Unfortunately, with millions of miles of power and telephone lines and thousands of towers, we continue to strike them, and unfortunately, we continue to lose lives as a result. The good news is that, with heightened awareness and better training, the number of wirestrikes by the general aviation (GA) community has been decreasing. The bad news is that civil helicopters are representing an increasing proportion of those wirestrikes. In 1992, there were a total of 90 general aviation wirestrike accidents. Of these, fifteen, or 17 percent, were by helicopters. By 1999, the total number of wirestrike accidents had been reduced to 30. However, of these, eleven, or 37 percent, were by helicopters. This ratio has been increasing since then. In 2002, the number of general aviation wirestrike accidents increased to 35, of which eighteen, or 52 percent, were by helicopters.

A critical element in reducing the number of wirestrikes is training. For years the Helicopter Association International (HAI) has offered a highly acclaimed "Flying in the Wire Environment" course at HELI-EXPO and other venues. This training heightens awareness of the hazard-rich low-level environment and provides guidance on how to avoid these hazards to those who must operate in that environment. In past years, accidents that occurred within the air medical service industry were often due to wirestrikes. However, in recent years this segment of the industry has been strongly represented at the wirestrike avoidance courses, and although there were air medical accidents in 2002, not one was due to a wirestrike! This supports the fact that wire avoidance

training does work and is crucial to those who must fly in the wire environment.

In addition to training, technologies have been developed that are designed to alert pilots of the presence of wires and towers in their flight path. Traditionally, the only devices to warn pilots of wires have been marker balls attached to wires or lights mounted on the towers that support the wires. These, unfortunately, have proven of limited value, as aircraft continue to fly into even marked wires. In recent years however, several avionics devices have been developed that provide hazard alerts. Such avionics can be expensive and must be installed in the aircraft for the pilot to be warned. Non-equipped aircraft do not receive such alerts, and it is they who constitute each year's wirestrike accident statistics.

Now, a system has been developed that does not require aircraft equipment other than a VHF radio and is comparable in cost to marker balls! This system is called the Obstacle Collision Avoidance System (OCAS). OCAS is currently being developed in Norway through collaboration between Norway's utility industry, the Civil Aviation Administration of Norway, and the Royal Norwegian Air Force. The OCAS system has the ability to provide round-the-clock, day or night, obstruction warning to aircraft without installation of anything other than a VHF (or UHF) radio. In essence, the system consists of low powered radar sensors mounted in modular tubes nine feet in length that weigh 375 pounds. These radars provide 360 degree continuous detection capability and are placed strategically in proximity to an identified low-level hazard, i.e. wires and/or towers. When these radar units detect an aircraft on a course and altitude that could result in a collision, the unit initially sends a signal to strobe

lights mounted on the obstruction to begin flashing. If the incoming aircraft does not alter course and remains on the collision course, the unit transmits a voice/oral warning message on all frequencies in the VHF (or UHF) communication band. This transmission is short range, so that it does not interfere with other facilities. When the aircraft climbs above the collision course, the transmission is no longer heard. Further, if there are nearby facilities where there could be interference with certain frequencies, those frequencies can be de-selected from the system. The range of the radar, depending on topography, is three miles. The system can be powered by either 220 or 110 volts AC, or by solar energy and a battery pack. The life expectancy of the power system is 15 years.

The field units are remotely controlled through an interface with a computer at an OCAS Control Center twenty-four hours-a-day, seven days-a-week. System status and reports including all aerial movement and potential warning activations are stored at this Center. The system provides utility companies with date-logged, explicit radar track records of aircraft movement, including speed, heading, and altitude. Further, in the event of a system failure, messages can be automatically sent to the Notice to Airmen (NOTAM) system.

A briefing on OCAS was provided at HAI's Utilities, Patrol, and Construction (UPAC) Committee meeting during HELI-EXPO '03, in Dallas, Texas. Subsequently, numerous utility companies inquired about testing the OCAS System in the United States. Currently, utility companies in the United States and Canada are being selected to begin testing. If OCAS lives up to its apparent promise, the number of wirestrikes could be dramatically reduced. With an ever-growing number of obstacles being erected, in many cases overnight, this may be some innovative technology that will save both lives and aircraft. ■

Richard M. Wright, Jr. is director of safety and flight operations for HAI



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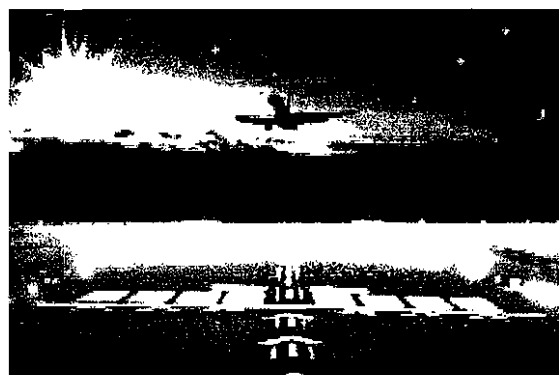
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EXHIBIT 8



National EMS Pilots Association

Date: January 27, 2009

To:

Honorable Mark V Rosenker, Acting Chairman, National Transportation Safety Board
Honorable Kathryn O'Leary Higgins, Member, National Transportation Safety Board
Honorable Robert L. Sumwalt, Member, National Transportation Safety Board
Thomas Haueter, Director Office of Aviation Safety, National Transportation Safety Board
Jeff Guzzetti, Senior Air Safety Investigator, Deputy Director for Regional Operations, National Transportation Safety Board

Kevin Haggerty, Manager for Obstruction Evaluation Service, Federal Aviation Administration

From: Kent Johnson, President, The National EMS Pilot's Association (NEMSPA)

Subject: Obstacle Collision Avoidance System (OCAS) Recommendation for Full Approvals and Updates to the AC 70/7460-1K Obstruction Marking and Lighting Guidelines for Inclusion

The mission of the National EMS Pilot's Association (NEMSPA) is to serve the pilots involved in the air-medical transport industry, and to work to improve the quality and safety of those services.

In this letter we would state our full support of the certification of the Obstacle Collision Avoidance System (OCAS) for adoption by the FAA as a standard in the FAA Advisory Circular 70/7460-1K, *Obstruction Marking and Lighting*, and should promote its use at *High Risk* obstructions.

The OCAS system assists low flying aircraft in the identification of air obstructions, in particular, wire crossings in rivers and valleys and tall towers. The system combines lighting as well as a VHF radio transmission to the aircraft which announces the proximity of the structure. We believe the audio component has the greatest positive impact on aviation safety in all flying conditions by providing the effective alerting of an aircraft/pilot that they are on a potentially life threatening course and to take action. An added benefit is that any aircraft with a VHF radio on board benefits from this technology with no additional equipment required.

Obstacle Related Accidents

Airborne EMS operations have seen a drastic increase in fatalities and it is our duty to our members to investigate all potential solutions to air accidents. In this letter we would like to specifically address the issue of accidents related to collisions with man made obstacles, in particular power lines, wind turbine farms, television, telecom and radio towers such as the most recent and highly publicized EMS accident in Aurora, IL where a helicopter struck a radio station tower killing all four people on board.

The FAA accident/incident data shows that wire and obstruction strike accidents are the top operational cause of rotorcraft accidents for the period of 1996 to 2006, and 35% of those accidents are fatal.

The National Transportation Safety Board statistics show a total of 996 reported aviation accidents/collisions involved power lines from January 1, 1990 to October 2003. Of the 996 accidents, 301 involved at least one fatality. (This is for power lines only and does not include guide wires, towers and other elevated structures.)

Addressing the Problem

We believe that the problem needs to be addressed and that the problem deserves a better solution over the existing conventional standards. Often we tend to focus on upgrading aircraft technology as the only solution but in fact this is a shared problem between obstacle owners and local aircraft pilots. NEMSPA believes that much of the burden for obstacle detection should logically fall into the obstacle owner's purview and responsibility, much as lighting and additional marking is now. OCAS appears to provide a true "win-win" solution.

NEMSPA believes there are two main issues that can be addressed to increase the safety standards with respect to the avoidance of obstacle collisions from a ground based perspective. First, the marking of an air obstacle is the ultimate responsibility of the obstacle owner. In many cases, the FAA only provides a "recommendation" as to the appropriate marking. The obstacle owner is then free to choose to implement the recommendation (or not). There are still many utility companies who choose not to follow FAA recommendations and the FAA does not have any enforcement authority in this area.

And secondly, the stated level of technology per the FAA Advisory Circular 70/7460-1K *Obstruction Marking and Lighting*, which describes the standards for marking and lighting structures includes technology that is decades old and in external studies has proven ineffective. The OCAS technology exceeded all testing requirements per the FAA evaluation in August of 2005 and has still not been included in AC 70/7460 (more than three years later), thus leaving proactive utility companies wanting to install OCAS hesitant to adopt the new system until included in the AC.

Recommended Actions

NEMSPA recommends the following:


- 1- The FAA should expedite its inclusion of OCAS like systems into the Advisory Circular 70/7460 in an expeditious manner. The updates should include both the visual and audio components of the solution. NEMSPA views the audio component as having the most critical life saving capability.
- 2- The FAA should provide stricter enforcement requirements in the marking of some obstructions. The first step may be to determine the criteria for a *High Risk* crossing/tower and then provide mandatory standards for this category of obstruction.

EXHIBIT 9


Specifier Bulletin

for Dark Sky Applications


VOLUME 1: ISSUE 3 : 2008 — International Dark-Sky Association




For more information on OCAS visit
their Web site www.ocasinc.com




Control unit




Solar power option



Lighting



Radar and VHF radio



For more information on other FSA
approved luminaires please visit the
IDA Web site www.darksky.org

A Dark Sky Solution for Obstacle Collision Avoidance

Top: Day and night depictions of existing detection markings. With OCAS, these lights would not be seen unless an aircraft were approaching at a dangerous altitude. Unless located near an airport, the lights would rarely be activated. However, OCAS will always be at the ready.

Introduction: The Dark Sky Friendly Device

THIS EDITION OF IDA's Specifier Bulletin introduces a new category of products that help reduce light pollution. Until recently, our focus has been upon identifying, designating, and promoting well designed Dark Sky Friendly Fixtures. The program has been quite a success, with small and major lighting manufacturers alike discovering the benefit of obtaining IDA certification. The concept of the Dark Sky Friendly Device is to designate lighting accessories or alternate illumination sources that, when utilized, will reduce light pollution in one of two ways: by replacing a conventional lighting application with one that has substantially less impact on the environment and better accomplishes the task at hand; or by modifying an existing product to mitigate undesirable effects of its normal operation.

The "Dark Sky" concept is now widely recognized, and market success is directing new and creative product development. Technological advances now include light dimmers and other timing and sensory control. Considering the potential for dark sky compliance and additional benefits such as energy savings, IDA encourages the installation and broad utilization of these new products. These innovative lighting accessories are important and worthy of promotion. IDA's certification and formal recognition of products other than luminaires marks an exciting period in the evolution of the Dark Sky Friendly Device to include a variety of lighting applications.

Obstacle Collision Avoidance



Introducing the Obstacle Collision Avoidance System, or OCAS:

FOR YEARS, TALL objects such as radio transmission towers, power poles, and wire crossings have had to comply with visibility regulations to indicate their presence. These regulations allow aircraft in close proximity to evade these hazards safely. However, aircraft collisions are increasing despite the well intentioned visual markers and illumination standards now in place. Quite simply, the present methods are inadequate. To make matters worse, while these detection systems fail to function as designed, they are creating more problems. Blinking lights are costly to operate, are responsible for millions of migratory bird deaths, are irritating to look at, and interfere with the simple enjoyment of the night time sky. With the increasing popularity of wind power, the blinking warning lights atop wind turbine generating facilities are beginning to affect far greater areas.

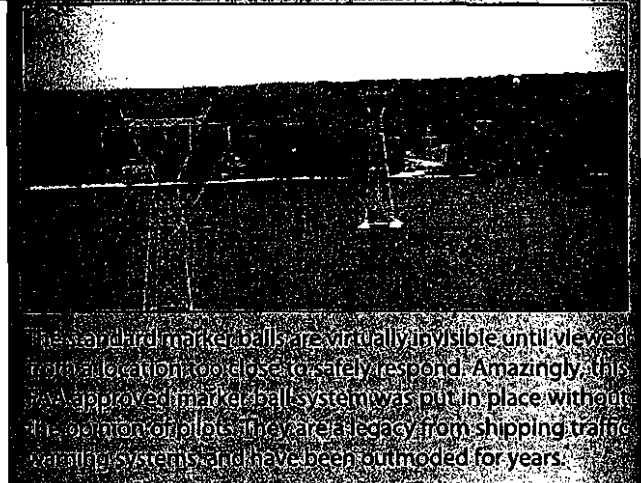
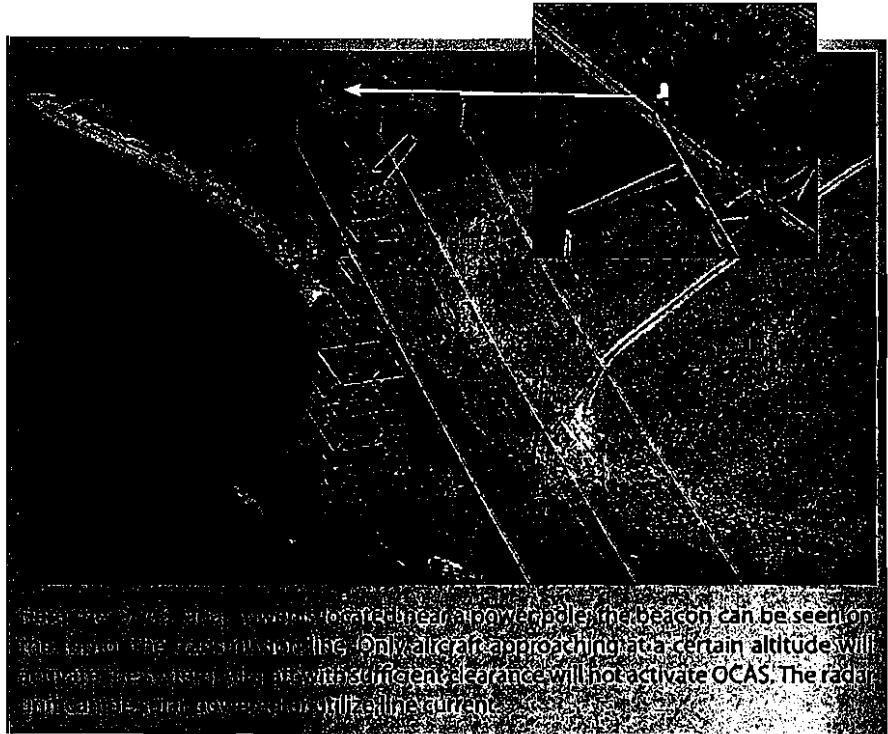
Fortunately, there is a solution to all of the present drawbacks: The Obstacle Collision Avoidance System, or OCAS. The system utilizes a proprietary ground-based radar to detect approaching air traffic. Upon detection, otherwise unlit light beacons will flash white during daytime and red at night. If the aircraft continues on an uncorrected course, the system activates a radio squawk and warns the pilot, "Powerline, powerline, powerline!"

Such an active system is exceptionally effective as a warning device that remains in an alert yet invisible state, ready to work only when needed. The system was developed by two fighter pilots that had lost friends and colleagues due to poorly marked aviation hazards. OCAS, Inc. originated in Norway and has recently opened in the U.S. The system has been utilized in Norway for several years on many of their tall power transmission lines and water crossings. It is now in use in Tennessee and

Kentucky, USA; as well as British Columbia, Canada. Later this year the system will be in place at the Whistler Blackcomb Ski Resort in Canada, the site of the next Winter Olympics. The OCAS system has received FAA approval, and the release of an amendment to the existing FAA Tower Lighting



and Marking Requirements in September will verify this. It is hoped that many of the existing or proposed wind turbine power generating installations will consider the OCAS for FAA marking requirements. Officials at a proposed installation near Pennsylvania's Cherry Springs State Park, recently designated an International Dark Sky Park, are aware of the system but have yet to decide on its adoption. Input from the public is encouraged. Please contact the park operations manager, Chip Harrison, at lymanrunsp@state.pa.us.



For information on IDA membership and the FSA program visit our Web site at www.darksky.org.